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Akira Watanabe

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DICKSTEIN SHAPIRO LLP
1633 Broadway
NEW YORK, NY 10019

EXAMINER

HOTELLING, HAROLD A

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/716,622	Applicant(s) WATANABE, AKIRA	
	Examiner HAROLD A. HOTELLING	Art Unit 2164	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The applicant filed amendments to the claims on June 15, 2009.

Response to Arguments

The applicant on June 15, 2009 filed arguments that the previously presented prior art references do not teach the applicant's June 15, 2009 amendments to the claims.

The examiner respectfully disagrees for the reasons given below for rejecting the applicant's June 15, 2009 amendments to the claims.

Status of Claims

Claims 1 – 17 are rejected under 35 U.S.C. 103(a).

35 U.S.C. §103 rejection

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1 – 17 (assigned to NEC) (effective filing date: November 20, 2002) are rejected under 35 USC 103 (a) as being obvious over Li (U.S. patent number 6,754,662) (assigned to Nortel) (effective filing date: August 1, 2000) in view of Kottisa (US 2004/0049494 A1) (assigned to Hewlett-Packard) (effective filing date: September 10, 2002).

With respect to independent claim 1, Li teaches **[a] packet search device that performs packet filter search for an inputted packet** (column 2, lines 13 – 14: “The present invention relates to a method and apparatus for classifying data packets.”), **comprising:**

a first search processor that searches predetermined conditional statements corresponding to a plurality of information areas included in header information of said packet using a first search method to generate first search results (column 4, lines 23 – 30: “Forwarding engine 102 first attempts to retrieve a classID for a defined flow corresponding to the incoming packet from cache 108 by calculating a hash key (block 304) and using it to lookup a corresponding entry in cache 108 (block 306). If the classID cannot be found in cache 108 (determined in block 308), forwarding engine 102 performs a search on stored classification information in memory

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110 (block 310).”); and a **second search processor** (column 3, lines 35 – 41: “As shown in FIG. 1, there are two main engines in the example architecture: a forwarding engine 102, which performs the search for an appropriate classID for arriving packets, and a control engine 104, which is used to calculate the cache hit statistics and to maintain the cached hash table. In one example of the invention, each engine is implemented by a separate CPU, . . .”) . . .

Li does not appear to explicitly teach (but Kottisa does teach) **that searches the first search results of said first search processor using a second search method that is different from said first search method** (paragraph [0006]: “According to an aspect of the present invention, there is provided a method for traversing search results from a search query. The method includes receiving the search results arranged in a first order and allowing traversing of the search results in a selected second order different from the first order.”).

Li and Kottisa are analogous art because they are from the problem-solving area of searches. At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Li and Kottisa before him or her, to modify the “control engine 104” of Li to include the “traversing of the search results in a selected second order different from the first order” of Kottisa because the combination makes more search results reachable.

The suggestion for doing so would have been Kottisa (paragraph [0022]: “Advantageously, the method for traversing search results described above gives a user a chance to reach search results that were otherwise unreachable or reachable only

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after tedious traversing using prior art means.”).

Therefore, it would have been obvious to combine Kottisa with Li to obtain the invention as specified in claim 1.

With respect to dependent claim 2, Li teaches **[t]he packet search device according to claim 1, wherein said first search processor divides said packet header information into a plurality of information areas and searches across each search conditional statements structured as binary search trees for each of said information areas separately** (column 5, lines 54 – 57: “the choice of data structures (i.e. a link list or a binary tree or other structure) may depend on the particular design objective of the packet classifier.”).

With respect to dependent claim 3, Li teaches **[t]he packet search device according to claim 2, wherein said second search processor searches aggregated search results of said first search processor using a Hash method** (column 3, lines 38 – 39: “a control engine 104 . . . is used to calculate the cache hit statistics . . .”) (column 4, lines 7 – 9: “Cache 108 is preferably comprised of high-speed cache memory that is readily available to forwarding engine 102 and control engine 104. Cache 108 stores a hash table . . .”).

With respect to dependent claim 4, Li teaches **[t]he packet search device according to claim 1, comprising a search database for managing each search**

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result of said first and second search processors for each of said information

area (column 4, lines 9 – 13: “Cache 108 stores a hash table with entries filled by class of service identifiers (i.e. classIDs) for (generally) the most recently detected flows. These entries are accessed by a hash key index that is generated by a hash function from packet header information . . .”).

With respect to dependent claim 5, Li teaches **[t]he packet search device according to claim 4, wherein said search database has a plurality of search keys** (column 4, lines 9 – 13: “Cache 108 stores a hash table with entries filled by class of service identifiers (i.e. classIDs) for (generally) the most recently detected flows. These entries are accessed by a hash key index that is generated by a hash function from packet header information . . .”).

With respect to dependent claim 6, Kottisa teaches **[t]he packet search device according to claim 3, wherein said second search processor manages only combinations of search results** (paragraph [0017]: “FIG. 3 illustrates a sequence 20 of steps for traversing the search results 18. The sequence 20 starts in a RESULTS AVAILABLE step 22, wherein the Web search engine 2 receives the search results 18 in a first order. This first order may be the result of ranking of the search results 18. The sequence 20 next proceeds to a PRESENT RESULTS step 24, wherein the browser 12 receives a first portion of the search results 18 from the Web search engine 2 . . .”).

With respect to dependent claim 7, Li teaches **[t]he packet search device according to claim 1, wherein at least QoS (Quality of Service) information and filter information are searched for based on said header information** (column 3, lines 55 – 60: “Memory 110 includes stored information about how different classes of network traffic are identified and how they are to be treated. Such information can include SLAs for DiffServ networks, and other filters and parameters for establishing different levels of Quality or Class of Service for different flows of traffic.”).

With respect to dependent claim 8, Li teaches **[t]he packet search device according to claim 1, wherein said packet search processing is performed at least in a router and a firewall** (column 3, lines 29 – 33: “FIG. 1 is a block diagram showing a classification architecture 100 in accordance with one example of the invention. Such an architecture can be provided in . . . an enterprise access/firewall router, a general Internet access router, etc.”).

With respect to independent claim 9, Li discloses **[a] packet processing search method, on a packet search device that includes a first search processor and a second search processor, that searches for a packet filter for an inputted packet before performing packet processing** (column 2, lines 13 – 14: “The present invention relates to a method and apparatus for classifying data packets.”) (column 3, lines 35 – 41: “As shown in FIG. 1, there are two main engines in the example architecture: a forwarding engine 102, which performs the search for an appropriate

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classID for arriving packets, and a control engine 104, which is used to calculate the cache hit statistics and to maintain the cached hash table. In one example of the invention, each engine is implemented by a separate CPU, . . .”), **comprising:**

a first step of the first search processor searching predetermined conditional statements corresponding to a plurality of information areas included in header information of said packet using a first search method to generate first search results (column 4, lines 23 – 30: “Forwarding engine 102 first attempts to retrieve a classID for a defined flow corresponding to the incoming packet from cache 108 by calculating a hash key (block 304) and using it to lookup a corresponding entry in cache 108 (block 306). If the classID cannot be found in cache 108 (determined in block 308), forwarding engine 102 performs a search on stored classification information in memory 110 (block 310).”); **and a second step of the second search processor** (column 3, lines 35 – 41: “As shown in FIG. 1, there are two main engines in the example architecture: a forwarding engine 102, which performs the search for an appropriate classID for arriving packets, and a control engine 104, which is used to calculate the cache hit statistics and to maintain the cached hash table. In one example of the invention, each engine is implemented by a separate CPU, . . .”) . . .

Li does not appear to explicitly teach (but Kottisa does teach) **searching the first search results at said first step using a second search method that is different from said first search method** (paragraph [0006]: “According to an aspect of the present invention, there is provided a method for traversing search results from a search query. The method includes receiving the search results arranged in a first

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order and allowing traversing of the search results in a selected second order different from the first order.”).

Li and Kottisa are analogous art because they are from the problem-solving area of searches. At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Li and Kottisa before him or her, to modify the “control engine 104” of Li to include the “traversing of the search results in a selected second order different from the first order” of Kottisa because the combination makes more search results reachable.

The suggestion for doing so would have been Kottisa (paragraph [0022]: “Advantageously, the method for traversing search results described above gives a user a chance to reach search results that were otherwise unreachable or reachable only after tedious traversing using prior art means.”).

Therefore, it would have been obvious to combine Kottisa with Li to obtain the invention as specified in claim 9.

With respect to dependent claim 10, Li teaches **[t]he packet processing search method according to claim 9, wherein in said first step the first search processor divides said packet header information into a plurality of information areas and searches across each search conditional statements structured as binary search trees for each of said information areas separately** (column 5, lines 54 – 57: “the choice of data structures (i.e. a link list or a binary tree or other structure) may depend on the particular design objective of the packet classifier.”).

With respect to dependent claim 11, Li teaches **[t]he packet processing search method according to claim 10, wherein in said second step the second search processor searches aggregated search results of said first step using a Hash method** (column 3, lines 38 – 39: “a control engine 104 . . . is used to calculate the cache hit statistics . . .”) (column 4, lines 7 – 9: “Cache 108 is preferably comprised of high-speed cache memory that is readily available to forwarding engine 102 and control engine 104. Cache 108 stores a hash table . . .”).

With respect to dependent claim 12, Li teaches **[t]he packet processing search method according to claim 9, wherein each search result at said first and second steps is managed for each of said information areas using a search database** (column 4, lines 9 – 13: “Cache 108 stores a hash table with entries filled by class of service identifiers (i.e. classIDs) for (generally) the most recently detected flows. These entries are accessed by a hash key index that is generated by a hash function from packet header information . . .”).

With respect to dependent claim 13, Li teaches **[t]he packet processing search method according to claim 12, wherein said search database has a plurality of search keys** (column 4, lines 9 – 13: “Cache 108 stores a hash table with entries filled by class of service identifiers (i.e. classIDs) for (generally) the most recently detected flows. These entries are accessed by a hash key index that is generated by a hash function from packet header information . . .”).

With respect to dependent claim 14, Kottisa teaches **[t]he packet processing search method according to claim 11, wherein in said second step the second search processor manages only combinations of search results** (paragraph [0017]: “FIG. 3 illustrates a sequence 20 of steps for traversing the search results 18. The sequence 20 starts in a RESULTS AVAILABLE step 22, wherein the Web search engine 2 receives the search results 18 in a first order. This first order may be the result of ranking of the search results 18. The sequence 20 next proceeds to a PRESENT RESULTS step 24, wherein the browser 12 receives a first portion of the search results 18 from the Web search engine 2 . . .”).

With respect to dependent claim 15, Li teaches **[t]he packet processing search method according to claim 9, wherein at least QoS (Quality of Service) information and filter information are searched for based on header information in said packet** (column 3, lines 55 – 60: “Memory 110 includes stored information about how different classes of network traffic are identified and how they are to be treated. Such information can include SLAs for DiffServ networks, and other filters and parameters for establishing different levels of Quality or Class of Service for different flows of traffic.”).

With respect to dependent claim 16, Li teaches **[t]he packet processing search method according to claim 9, said packet search processing is performed at least in a router and a firewall** (column 3, lines 29 – 33: “FIG. 1 is a block diagram showing

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a classification architecture 100 in accordance with one example of the invention. Such an architecture can be provided in . . . an enterprise access/firewall router, a general Internet access router, etc.”).

With respect to independent claim 17, Li discloses **[a] computer-readable medium storing a program for causing a program-controlled packet search device that includes a first search processor and a second search processor to perform a packet processing search method that searches for a packet filter for an inputted packet before performing packet processing, causing the program-controlled packet search device to execute** (column 2, lines 13 – 14: “The present invention relates to a method and apparatus for classifying data packets.”) (column 3, lines 35 – 41: “As shown in FIG. 1, there are two main engines in the example architecture: a forwarding engine 102, which performs the search for an appropriate classID for arriving packets, and a control engine 104, which is used to calculate the cache hit statistics and to maintain the cached hash table. In one example of the invention, each engine is implemented by a separate CPU, . . .”),

first processing by the first search processor that searches predetermined conditional statements corresponding to a plurality of information areas included in header information of said packet using a first search method to generate first search results (column 4, lines 23 – 30: “Forwarding engine 102 first attempts to retrieve a classID for a defined flow corresponding to the incoming packet from cache 108 by calculating a hash key (block 304) and using it to lookup a corresponding entry

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in cache 108 (block 306). If the classID cannot be found in cache 108 (determined in block 308), forwarding engine 102 performs a search on stored classification information in memory 110 (block 310).”); **and second processing by the second search processor** (column 3, lines 35 – 41: “As shown in FIG. 1, there are two main engines in the example architecture: a forwarding engine 102, which performs the search for an appropriate classID for arriving packets, and a control engine 104, which is used to calculate the cache hit statistics and to maintain the cached hash table. In one example of the invention, each engine is implemented by a separate CPU, . . .”) . . .

Li does not appear to explicitly teach (but Kottisa does teach) **that searches the first search results of said first processing using a second search method that is different from said first search method** (paragraph [0006]: “According to an aspect of the present invention, there is provided a method for traversing search results from a search query. The method includes receiving the search results arranged in a first order and allowing traversing of the search results in a selected second order different from the first order.”).

Li and Kottisa are analogous art because they are from the problem-solving area of searches. At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Li and Kottisa before him or her, to modify the “control engine 104” of Li to include the “traversing of the search results in a selected second order different from the first order” of Kottisa because the combination makes more search results reachable.

The suggestion for doing so would have been Kottisa (paragraph [0022]:

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“Advantageously, the method for traversing search results described above gives a user a chance to reach search results that were otherwise unreachable or reachable only after tedious traversing using prior art means.”).

Therefore, it would have been obvious to combine Kottisa with Li to obtain the invention as specified in claim 17.

Conclusion

The examiner notes that the applicant's arguments that were presented have been carefully and respectfully considered by the examiner, but they are not persuasive. Accordingly, the Office Action has been made **FINAL**. See MPEP § 706.07(a). The applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the

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examiner should be directed to Harold A. Hotelling whose telephone number is (571) 270-1293. The examiner can normally be reached between 7:00 a.m. - 5:30 p.m. Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones, can be reached at (571) 272-4085. The fax phone number for the organization where this application or proceeding is assigned is (571) 270-2293.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Harold A. Hotelling
Examiner
Art Unit 2164

HAH
October 6, 2009
/H. A. H./
Examiner, Art Unit 2164

/Charles Rones/
Supervisory Patent Examiner, Art Unit 2164